Effect of Orally-Administered Vitamin C on Random Skin Flap Viability in Nicotine-Exposed Rats

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ABSTRACT

Background: In Dr. Soetomo Hospital, 2015, as much as 15,9% flaps are found to be compromised in Dr. Soetomo General Hospital. Skin flaps in smokers population are in greater risk to be compromised. Adverse effects from nicotine such as alteration in blood flow, diminished distal capillary perfusion, platelet aggregation, epithelialization alteration, dan disturbance of inflammation phase in wound healing may be diminished by administration of antioxidants. One of the most promising antioxidant is vitamin C (ascorbic acid), which is cheap, easy to find, and are abundant in many vegetables and fruits. This research aims to test the effect of vitamin C on random flap viability in nicotine-exposed rats.

Methods: Randomized experimental research, post test-only design. Twenty seven white rats (Rattus norvegicus) are assigned in three groups. The first group received no nicotine while the other two groups were nebulized with nicotine for 4 weeks. Random skin flap is made on the back of each rat. The third group received 7-day oral vitamin C. After 7 days, number of arteries and VEGF expression are examined from histopathologically.

Results: No number of arteries difference (p=0,294; CI 95%) between first (Mean 5,33; SD 1,323) and second group (Mean 5,89; SD 0,782). Arteries are more numeruous (p=0,006; CI 95%) in third group (Mean 7,33, SD 1,118) than in second group. No VEGF expression difference (p=0,317, CI 95%) between first and second group, but higher in third group (p=0,001, CI 95%) compared to second group.

Conclusion: Orally administration of vitamin C increases random flap viability in nicotine-exposed rats by increasing VEGF expression and number of arteries.

Keywords: *vitamin C, flap, nikotin*